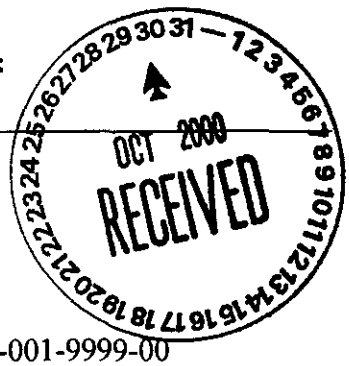
H1045

RECRA ENVIRONMENTAL INC.

*Chemical and Environmental Measurement Information*

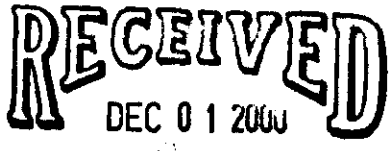
0054054




**Recra LabNet Philadelphia**
**Analytical Report**

**Client:** TNU-HANFORD B99-041
**RFW#:** 0009L700
**SDG/SAF#:** H1045/B99-041

**W.O.#:** 10985-001-001-9999-00
**Date Received:** 09-21-00




**EDMC**

## METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recovery for Lead was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration levels, due to high concentrations of the following analytes:

| Sample ID | Element | PDS Concentration (ppb) | PDS % Recovery |
|---|---|---|---|
| B108L0 | Lead | 5000 | 89.7 |

12. The duplicate analyses for Lead was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-25-00
Date

jjw/m09-700

# METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0709L700

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050B __3051 __200.7 __SS17
__Other: _____

## Metals Analysis Methods

| | SW846 | EPA | STD MTD | EPA OSWR | USATHAMA |
|---|---|---|---|---|---|
| Aluminum | __6010B | __200.7 | | | __99 |
| Antimony | __6010B __7041 [5] | __200.7 __204.2 | | | __99 |
| Arsenic | __6010B __7060A [5] | __200.7 __206.2 | __3113B | | __99 |
| Barium | __6010B | __200.7 | | | __99 |
| Beryllium | __6010B | __200.7 | | | __99 |
| Bismuth | __6010B [1] | __200.7 [1] | | __1620 | __99 |
| Boron | __6010B | __200.7 | | | __99 |
| Cadmium | __6010B __7131A [5] | __200.7 __213.2 | | | __99 |
| Calcium | __6010B | __200.7 | | | __99 |
| Chromium | __6010B __7191 [5] | __200.7 __218.2 | | | __SS17 |
| Cobalt | __6010B | __200.7 | | | __99 |
| Copper | __6010B __7211 [5] | __200.7 __220.2 | | | __99 |
| Iron | __6010B | __200.7 | | | __99 |
| Lead | ✓6010B __7421 [5] | __200.7 __239.2 | __3113B | | __99 |
| Lithium | __6010B __7430 [4] | __200.7 | | __1620 | __99 |
| Magnesium | __6010B | __200.7 | | | __99 |
| Manganese | __6010B | __200.7 | | | __99 |
| Mercury | __7470A [3] __7471A [3] | __245.1 [2] __245.5 [2] | | | __99 |
| Molybdenum | __6010B | __200.7 | | | __99 |
| Nickel | __6010B | __200.7 | | | __99 |
| Potassium | __6010B __7610 [4] | __200.7 __258.1 [4] | | | __99 |
| Rare Earths | __6010B [1] | __200.7 [1] | | __1620 | __99 |
| Selenium | __6010B __7740 [5] | __200.7 __270.2 | __3113B | | __99 |
| Silicon | __6010B [1] | __200.7 | | __1620 | __99 |
| Silica | __6010B | __200.7 | | __1620 | __99 |
| Silver | __6010B __7761 [5] | __200.7 __272.2 | | | __99 |
| Sodium | __6010B __7770 [4] | __200.7 __273.1 [4] | | | __99 |
| Strontium | __6010B | __200.7 | | | __99 |
| Thallium | __6010B __7841 [5] | __200.7 __279.2 __200.9 | | | __99 |
| Tin | __6010B | __200.7 | | | __99 |
| Titanium | __6010B | __200.7 | | | __99 |
| Uranium | __6010B [1] | __200.7 [1] | | __1620 | __99 |
| Vanadium | __6010B | __200.7 | | | __99 |
| Zinc | __6010B | __200.7 | | | __99 |
| Zirconium | __6010B [1] | __200.7 [1] | | __1620 | __99 |

Other:_____ Method:_____

# METHOD REFERENCES AND DATA QUALIFIERS

## DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

## ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

## ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/28/00

CLIENT: TNU-HANFORD B99-041 RECRA LOT #: 0009L700

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -001 | B108L0 | Lead, Total | 943 | MG/KG | 0.20 | 1.0 |
| -002 | B108L1 | Lead, Total | 4.3 | MG/KG | 0.21 | 1.0 |
| -003 | B108L2 | Lead, Total | 31.4 | MG/KG | 0.20 | 1.0 |
| -004 | B108L3 | Lead, Total | 11.8 | MG/KG | 0.20 | 1.0 |

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/28/00

CLIENT: TNU-HANFORD B99-041 RECRA LOT #: 0009L700

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| BLANK1 | 99L1574-MB1 | Lead, Total | 0.21 u | MG/KG | 0.21 | 1.0 |

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 09/28/00

CLIENT: TNU-HANFORD B99-041 RECRA LOT #: 0009L700

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV | DILUTION FACTOR(SPK) |
|---|---|---|---|---|---|---|---|
| -001 | B108L0 | Lead, Total | 371 | 943 | 48.2 | -1200. * | 1.0 |

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 09/28/00

CLIENT: TNU-HANFORD B99-041 RECRA LOT #: 0009L700

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | RPD | DILUTION FACTOR(REP) |
|---|---|---|---|---|---|---|
| -001REP | B108L0 | Lead, Total | 943 | 152 | 144.5 | 1.0 |

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/28/00

CLIENT: TNU-HANFORD B99-041 RECRA LOT #: 0009L700

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 99L1574-LC1 | Lead, LCS | 243 | 250 | MG/KG | 97.2 |

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-041

DATE RECEIVED: 09/21/00 RFW LOT # :0009L700

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| B108L0 | | | | | | |
| LEAD, TOTAL | 001 | S | 99L1574 | 09/19/00 | 09/21/00 | 09/22/00 |
| LEAD, TOTAL | 001 REP | S | 99L1574 | 09/19/00 | 09/21/00 | 09/22/00 |
| LEAD, TOTAL | 001 MS | S | 99L1574 | 09/19/00 | 09/21/00 | 09/22/00 |
| B108L1 | | | | | | |
| LEAD, TOTAL | 002 | S | 99L1574 | 09/19/00 | 09/21/00 | 09/22/00 |
| B108L2 | | | | | | |
| LEAD, TOTAL | 003 | S | 99L1574 | 09/19/00 | 09/21/00 | 09/22/00 |
| B108L3 | | | | | | |
| LEAD, TOTAL | 004 | S | 99L1574 | 09/19/00 | 09/21/00 | 09/22/00 |
| LAB QC: | | | | | | |
| LEAD LABORATORY | LC1 BS | S | 99L1574 | N/A | 09/21/00 | 09/22/00 |
| LEAD, TOTAL | MB1 | S | 99L1574 | N/A | 09/21/00 | 09/22/00 |

RECRA LabNet Use Only

00916700

# Custody Transfer Record/Lab Work Request

Page 1 of 1

**FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS**

RECRA LabNet

Client: TOC: Hanford B99-041

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: Spec Del: Std TAT: 3 day

Date Rec'd: 9-21-00 Date Due: 9-24-00

Account #:

Refrigerator #

| #Type Container | Liquid | | | | | | | | 4 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Solid | | | | | | | | 1Ag | | | | | | | |
| Volume | Liquid | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | 60 | | | | | | | |
| Preservatives | | | | | | | | | - | | | | | | | |

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

RECRA LabNet Use Only: MPBTO

| MATRIX CODES: S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, L = EP/TCLP Leachate, WI = Wipe, X = Other, F = Fish | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | MPBTO |
|---|---|---|---|---|---|---|---|---|
| | 001 | BIOBLO | | | S | 9-18-00 | 0814 | ✓ |
| | 002 | 1 | | | | | 0819 | ✓ |
| | 003 | 2 | | | | | 0823 | ✓ |
| | 004 | 3 | | | | | 0827 | ✓ |

**Special Instructions:** Soil B99-041

**DATE/REVISIONS:**

1. Run Matrix QC
2.
3.
4.
5.
6.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| FedEx | TReport | 9-21-00 | 0915 |
| | | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| COMPOSITE WASTE | ORIGINAL REWRITTEN | | |

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: 4235 7953 9891

**RECRA LabNet Use Only**

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # Fedex

2) (Ambient) or Chilled

3) Received in Good Condition (Y) or N

4) Labels Indicate Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

COC Tape was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 3.4 C

| Bechtel Hanford Inc. | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | B99-041-317 | Page 1 of 1 |
|---|---|---|---|---|
| Collector: Renee Nielson | Company Contact: Mike Stankovich | Telephone No.: 531-7620 | Project Coordinator: TRENT, SJ | Price Code: 2C; Data Turnaround: 3 days |
| Project Designation: 100 H Area - Quick Turn | Sampling Location: 100-H-21 Pipeline | | SAF No.: B99-041 | Air Quality ☐ |
| Ice Chest No.: ERC 99.068 (IDF) | Field Logbook No.: EL-1500-3 | COA: RH0PEP2600 | Method of Shipment: Federal Express | |
| Shipped To: TMA/RECRA | Offsite Property No.: A0B0292 | | Bill of Lading/Air Bill No.: 42357953 9091 | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

**Special Handling and/or Storage**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | | | | | | | | | | |
| Type of Container | aG | | | | | | | | | | |
| No. of Container(s) | 1 | | | | | | | | | | |
| Volume | 60mL | | | | | | | | | | |
| **SAMPLE ANALYSIS** — See Item (1) in Special Instructions | lead only | | | | | | | | | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | |
| B108L0 | SOIL | 9-19-00 | 0814 | X | | | | | | | |
| B108L1 | SOIL | 9-19-00 | 0819 | X | | | | | | | |
| B108L2 | SOIL | 9-19-00 | 0823 | X | | | | | | | |
| B108L3 | SOIL | 9-19-00 | 0827 | X | | | | | | | |

**CHAIN OF POSSESSION**

| Relinquished By / Date/Time | Received By / Date/Time |
|---|---|
| R.Nielson 9/19/00 1530 | RJN 9/19/00 STORED 1530 |
| Removed from Ref#C 3728 9-20-00 0800 | R.Thoren 9-20-00 0800 |
| R.Thoren 9-20-00 0800 | FEDEX |
| FedEx 9-21-00 0915 | TKroppel 9-21-00 0915 |
| | |
| | |

**SPECIAL INSTRUCTIONS** RJN 9/19/00

(1) ICP Metals - 6010A (Supertrace) (~~Arsenic, Chromium~~, Lead); ~~Mercury - 7471 - (CV)~~

Ship using total activity BOWX X3

Samples stored in Ref.# C at the 3728 Shipping Facility on 9/19/00.
Collector not available to relinquish samples on 9/20/00 for shipment. RT 9.20.00

Matrix *: S=Soil; SE=Sediment; SO=Solid; SL=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquid; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

| | | |
|---|---|---|
| LABORATORY SECTION | Received By | Title / Date/Time |
| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By / Date/Time |

BHI-EE-011 (10/99)